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The Bradshaw Lecture

DELIVERED BEFORE THE ROYAL COLLEGE OF SURGEONS OF ENGLAND ON DECEMBER 1, 1904

BY

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SENIOR VICE-PRESIDENT OF THE COLLEGE

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CANCER

AND ITS TREATMENT

MR. PRESIDENT AND GENTLEMEN,—

My response to your kind invitation to deliver the Bradshaw Lecture was prompted by a profound sense of the honour conferred on me; but as I began to realize the full responsibility of the step, my difficulties as to the choice of a subject sufficiently important have given me many anxious moments. In selecting the treatment of cancer I offer no apology, for no one can question the importance of the subject, or that it holds a most prominent position in the thoughts both of the medical profession and the public; moreover, I felt that such an opportunity as the present might be utilized to offer a protest both against the fatalistic tendency to delay and the senseless running after false gods in the treatment of this fell disease. I cannot lay claim to being alone in my advocacy of these views, for several of my colleagues on the Council of this College, and many other workers, have also urged them; but as a practical surgeon I can contribute facts both from my own experience and from that of others which will, I hope, help to carry the conviction that cancer, if it be discovered early and thoroughly removed, is by no means so hopeless a disease as is usually thought.

Of the true cause of cancer we really know nothing: even if we could accept the view of those pathologists who consider malignant disease as simply due to an alteration of somatic into generative elements we should be still begging the true cause; nor can we accept unreservedly the statement of the able superintendent of the Imperial Cancer Research Fund that, from the histological character, method of growth, and absence of specific symptomatology, it is not permissible to seek for the causative factor of cancer outside the life processes of the cells, for our present knowledge does not warrant such a positive statement, and it would appear from the observations of several competent pathologists that facts are not incompatible with the theory that cancer may be produced by an intracellular parasite which stimulates the cell to excessive multiplication. The fact that no parasite has been hitherto discovered is no proof that the quest is hopeless, and should be no deterrent to a continuance of research work. How many years were spent in fruitless search before Koch found the tubercle bacillus —a discovery that has placed tuberculosis on quite another platform, and one which bids fair to the stamping out of the disease! Does anyone doubt the origin of measles, scarlet fever, or syphilis from organisms? yet how much uncertainty there is! Recently Councilman has apparently proved that vaccine bodies form one phase of the life-history of the protozoon said to cause small-pox, and Dr. Roswell Park and Dr. Gaylord regard the cell inclusions in cancer as being of the same nature, though the presence of these organisms in cancer tissue is, of course, no proof that they are the cause of the disease, and the same remarks apply to Bosc's arguments and experiments on sporozoa. That bacteria are not the only possible pathogenic parasites the history of malaria has proved. We are

still in almost total ignorance of some of the lowest forms of life and of their biological peculiarities, nor are we sure that Koch's laws will be valid for them.

Until recently our ideas of the infinitely small were limited to the atom; but the atom has been split up, and the bombardments witnessed within a Crookes tube are said to be due to the broken-up particles termed 'electrons,' which in size are reputed to present as great a contrast to an ordinary bacterium as a bacillus does to the human body. Have we any proof that there are not organisms infinitely smaller than the smallest known micrococcus—organisms which may be ultra-microscopic, and which may be contained within the cells known as cancer cells, and be the true cause of their eccentricities? I had the privilege of seeing a microscope at the Royal Institution in April of this year which bids fair to give us a range of vision far beyond anything that Helmholtz conceived possible when he argued that from physical reasons it was impossible to construct a microscope which would give a large scale image; and experience has so far justified his conclusions that the best work has been done with magnification of from 400 to 500 diameters, yet I saw distinctly there objects under a magnifying power of 10,000 diameters. It will help the appreciation of this point to say that the eye of the house-fly, if depicted on the same scale as shown by the microscope in question, would be an object 24 feet long by 13 feet broad. This discovery will doubtless reveal much that was previously unknown, and possibly bring into view our quest, though as yet this is a mere anticipation.

Even of the predisposing causes of cancer we know next to nothing, though of theories there are many. My friend the late Sir William Mitchell Banks and others thought overfeeding might afford an explanation; one physician asserts that it is uric acid, and

would limit the intake of nitrogen; whereas others consider it due to an excess of carbohydrates, and suggest that starches and sugar should be limited. The teetotalers, of course, find in alcohol a possible cause, and the non-smokers decry tobacco. Some advise us to eschew salads and all uncooked vegetables, and others would have us abolish salt as an article of diet. In fact, there is scarcely any form of diet or luxury that has not at one time or another been condemned. Do not all these theories make one feel that until something more definite is found out, the public have a just cause of complaint against those who, on insufficient evidence, not only would cut off their luxuries one by one, but would even tax the necessaries of life with suspicion?

The investigations conducted by Dr. E. F. Bashford and Dr. J. A. Murray, of the Imperial Cancer Research Fund, confirm those of previous workers, that malignant growths exist in all branches of the vertebrata, and the idea that domestic animals alone are affected with cancer is also exploded by the facts now made known to us. A special interest attaches to the cases of carcinoma in fish, two of these occurring in fish living in the open sea. A wild mouse also has been found to be affected with spheroidal-celled carcinoma. As to men in a state of nature, during some weeks that I spent in the wilder parts of North America this year, I made inquiries among the natives themselves, and also from medical men who had had experience of their diseases, and I was told that cancer is not unknown among them, even in the wilderness away from civilization. From the great diversity of the food, habitat, and conditions of life of men and animals in which cancer occurs, it may be concluded that external agencies of food, climate, and general environment have apparently little or no causative influence. The new tumour that

arises in an animal from the transplantation of a portion of a growth arises by cell division from the tumour cells introduced, and presents in all stages of its increase the same minute structure; further, growth can apparently only take place in animals of the same species, and fails in even nearly related animals. Any agency which destroys the vitality of the cell renders the results of transplantation completely negative, showing that the virus is a living one.

One exciting cause only we are certain of, and that is irritation in a variety of forms. Another fact we can absolutely prove is that cancer is at first a local disease, and only later a constitutional malady. Mr. Jonathan Hutchinson insisted on this thirty years ago, and it has been confirmed by modern research, as the following statement by Dr. Bashford will show:

'Our observations on animals show that malignant growths are always local in origin, and of themselves produce no evident constitutional disturbance whatever. These facts are in full accord with accumulated clinical experience in man.'

The question of infectivity is of such importance that I cannot pass over it without expressing my views on the subject.

Infectivity.

Although cancer is not infectious in the ordinarily accepted sense of infection, there is a very large accumulation of facts which seem to prove that it is locally infective and capable of distribution by contact and inoculation. Bosc* has given a number of examples of transference of cancer from man to animals and *vice versâ*, as well as from animals of one species to those of other species; but further researches must be made and the results verified before these can be

* 'Le Cancer Maladie Infectieuse et Sporozoaire.'

accepted and used in argument, especially in view of the work to which I have just referred.

There is ample proof of the possibility of the transference of cancer artificially from animal to animal of the same species, and clinical evidence not only of auto-infection, but of infection from man to man. In 1889 Hanan proved the possibility of inoculating cancer from rat to rat. In 1894 Moran conveyed the disease from a cancerous mouse to other mice. Later, Jensen, of Copenhagen, made a great number of successful inoculations, and from the same graft of cancer Dr. Bashford and Dr. Murray have performed a large number of successful experiments, which have been, and are being, carefully recorded. Through their kindness I have had the opportunity of seeing a number of the mice with tumours in various stages, and of seeing microscopic sections of growths that have been removed. The tumours arise from the actual cells introduced, without any participation of the cells of the host, acting in every way as a parasite. I understood Dr. Bashford to say that healthy mice mixing with the cancerous ones had not become infected; but Borrel, of the Pasteur Institute, found that on putting cancerous mice into a cage with healthy ones a considerable number of the latter became infected with the disease.

With regard to contagion from man to man, a considerable number of well-verified cases of genital cancer, apparently communicated from the wife with uterine cancer to the husband, have been reported. Gueniot collected twenty-eight; other striking cases have been communicated by Duplouy, T. G. Laslett, E. Hooper May, and by my colleague Mr. R. Clement Lucas. There are many single cases of infection from man to man recorded which it would not be safe to argue from; *e.g.*, among others, Dove recorded two cases of epithelioma said to have been conveyed by

an infected pipe, and Bosc quotes the cases of three children who developed cancer of the breast after having slept for a long time with their mother, who was afflicted with mammary cancer.

The possibility of conveyance of contagion by insects has apparently been experimentally proved by Moran, who showed that by introducing fleas which had occupied the cages of cancerous mice into cages occupied by healthy mice, the latter, with few exceptions, developed cancer within a few months. Bosc relates a case, on the authority of Forgue, where a man was bitten on the cheek by a large fly, which he crushed *in situ*, and in which exact spot there developed in a short time a rapidly-growing epithelioma.

Cancer is undoubtedly auto-infective; hence the danger of an imperfect operation, which, by distributing the cancer cells, implants numerous foci of disease. I recently saw a marked example of such a condition in a patient who consulted me with a view to operation. She gave the history of having had a cancer removed from the breast over three years previously by a radical operation; at the end of that period a small lump was noticed in the clavicular portion of the pectoral muscle, the skin being healthy and non-adherent. A surgeon removed the muscle, including the lump; but finding enlarged glands at the top of the axilla, he attempted to get them away by digital enucleation, with the result that they burst and infected the whole of the wound, which, however, healed by first intention. Within two months every needle puncture was the site of a small cancerous nodule, and numerous other nodules appeared over the chest-wall and over the clavicle and shoulder, leading to a rapidly fatal termination. We must all have seen similar cases, and the lesson conveyed is that, if possible, cancerous tumours should be removed without preliminary incision, leaving a wide area of

healthy tissue around the growths, and wherever practicable the nearest lymphatic glands and vessels going to them should be removed, whether enlarged or not. If the glands be already infected it is of the utmost importance that they should be taken away cleanly without rupture, and wherever possible in the same piece as the tumour. If for diagnostic purposes the tumour has to be incised, the exploratory incision should be closed by sutures, the skin purified, the knife and needles boiled, and the surgeon's hands sterilized before proceeding with the operation. If, unfortunately, the wound has become soiled, it should be irrigated with a large quantity of saline solution or of some antiseptic lotion, so as to wash away any loose masses of cancer cells or infective material, which if left will probably become engrafted and grow as in the case that I have mentioned.

My friend Dr. Mayo, of Rochester, U.S.A., insists on the importance of searing the edges of the stomach wound with the actual cautery after partial gastrectomy, in order to avoid leaving any infected surface after the removal of a gastric cancer; and the importance of this I would strongly emphasize should it be necessary to incise the gastric wall near the growth, though when the incision is made wide of the tumour this is no longer necessary. Some English surgeons apply absolute phenol for the same reason to any doubtfully infected surface after removal of a cancerous tumour. So long as the tumour is not ulcerated it is probably not contagious, but from the moment that ulceration occurs, transmission to the patient or others, granted a suitable medium, may be possible. Such transmission is, however, probably rare, as the conditions necessary to a successful transmission must be difficult to realize.

The following facts among others that could be related seem to prove without doubt the auto-infectivity

of ulcerated cancer. Williams* relates a case of an ulcerating cancer of one thigh infecting the opposite thigh by contact. Cripps reported a case of ulcerating cancer of the breast infecting the skin of the inner side of the arm where it had come in contact with the growth. Roswell Park, Waldegar, Quincke, myself, and others, have seen cancer to involve the whole length of the trocar puncture after tapping for ascites due to abdominal cancer. I have seen the needle punctures and the adjoining skin, previously healthy, to become infected after the removal of cancer of the ovary, and Sippal has quoted some similar cases. I have seen and others have reported cases of a supra-pubic drainage opening becoming infected after the removal of epithelioma of the bladder. Hurry Fenwick has noted its transmission from one surface to another in the bladder, an observation which I can also confirm. I have heard of a case where an epithelioma of a projecting lower lip, which could just touch the tip of the nose in an edentulous old man, gave rise to a similar growth on the tip of the nose, and I have seen a second epithelioma to arise on the upper lip opposite to an epithelioma of the lower lip, and a growth to arise inside the cheek opposite to an epithelioma of the jaw, and also opposite to one of the tongue. Schimmelbusch has reported cancerous infection of the lip through the finger nails of a patient who was handling his cancerous ear.

It would form an interesting subject for inquiry, to ascertain how often cancer of the stomach follows on, or accompanies, cancer of the œsophagus and cancer of the tongue and mouth, owing to the swallowing of cancerous particles. Such cases have been reported by Cornil, Klebs, Lurcke, and Menetrier. That the two are often associated is recognised, but I suspect

* *British Medical Journal*, 1887, p. 1369.

that the association is more frequent than is generally supposed.

From these observations it seems highly probable that cancer is both contagious and inoculable among human beings, as it undoubtedly is among the lower animals. These facts are so suggestive that, although it may not be necessary to advise segregation of cancer patients, it would seem most desirable that all dressings taken from cancer patients should be burnt; that linen soiled by cancerous sores should be destroyed or disinfected by boiling; that contact with cancerous ulcers, whether of the lip, tongue, breast, uterus, or other parts, should be avoided; and that common use of beds and utensils with cancerous patients should not occur.

The Treatment of Cancer.

The very fact that cancer is often only submitted to the surgeon when it has either ceased to be a local disease, or, if still local, when it has invaded the tissues to so large an extent that its complete removal is difficult or impossible, has not only misled the public, but has even biassed many members of our profession as to the true facts of what surgery can do for this fatal disease. 'Too late' has yet to be said in one-half or three-fourths of the cancer cases when seen by the operating surgeon. Many even intelligent persons, having abandoned all hope of permanent benefit from surgical treatment, throw themselves into the arms of so-called cancer specialists, who fatten on the credulity and ignorance of their victims, and only when all hope of benefit by recognised methods has passed are they allowed to escape from their clutches.

The methods of treatment, psychical, physical, medicinal, photo-therapeutic, electrical, etc., are almost too many to mention, certainly too many to describe, in a

limited time; but it ought to be made known that one and all have been found wanting except in rodent ulcer, and, so far as our present knowledge is concerned, in the early diagnosis and immediate, complete, and wide removal lies the only hope of cure in malignant disease. In considering the surgical treatment of cancer I propose to treat of preventive, curative, and palliative operations.

Preventive Treatment.

Until the true and ultimate causative factor in the life-history of the cancer cell is discovered a preventive treatment generally applicable is unlikely to be arrived at; but I think that the ultimate discovery of a prophylactic is very hopeful, for it seems likely that, whether the cellular theory or the parasitic theory be the correct one, the biological problem of altering the life-cycles of the cells in the former case or of forming an antiserum in the latter will be surmounted. Hitherto, however, no serum has been found that in any way limits or benefits the disease; and my experience coincides with that of other observers as to the worthlessness of the serum treatment now being employed and advocated by certain so-called cancer specialists.

Preventive Operations.

Precancerous Conditions. — The so-called pre-cancerous stage of malignant disease may be due to disturbances of nutrition, to previous injury, to congenital defect, or to other departures from the normal conditions. Senility and decadence of tissues which have passed the period of their usefulness, and are about to undergo physiological rest, are predisposing factors. Predisposing conditions also exist in certain parts of the body where embryological vestiges or rests are found,

and in certain regions, as the pylorus and the cæcum, and at the lines of junction of skin and mucous membrane. In certain situations, precancerous conditions can be readily recognised; this especially applies to the tongue, lips, larynx, uterus, and the skin, suggesting strongly that cancer is a new implantation on a prepared ground. Probably, if we could only find it, every cancer, whether external or internal, follows on a precancerous condition, such as cancer of the gall-bladder on ulceration produced by gall-stones, cancer of the stomach on chronic gastric ulcer, epithelioma of the penis on irritation under a phimosis, cancer of the bladder on papilloma or on ulcers due to calculi, and cancer of the rectum and colon on stercoral or other ulcers. The liability of benign tumours, especially on epithelial surfaces, to undergo malignant changes is well recognised; hence the removal of such is generally advisable.

A general acceptance of the view that cancer has usually a precancerous stage, and that this stage is one in which operation ought to be performed, would be the means of saving many useful lives, for it would lead to the removal of all suspicious epithelial conditions before the onset of cancer. As Mr. W. H. A. Jacobson puts it: 'What is a man the worse if we have cut away a warty sore on his lip, and when you come to put sections under the miscroscope you find no nested cells? If you have removed a painful hard-based ulcer of the tongue, and with it, perhaps, an eighth part of the organ, and when all is done and the sore healed, a zealous pathological friend demonstrates to you that the ulcer is not cancerous, need your conscience be troubled? You have operated in the precancerous stage, and you have probably effected a permanent cure of what would soon have become an incurable disease.'

I hold that the arrest or removal of known causes,

as well as the abolition of discoverable precancerous conditions, whenever or however occurring, constitute true preventive treatment. I will give some examples. Cancer of the mouth, and especially of the tongue and lips, occurs very much more frequently in man than in woman, the increased frequency in the male sex being probably due in a great measure to the abuse of tobacco —a well-known source of irritation if used in excess, and which should be stopped as soon as it begins to irritate. M. Tillmann states that of seventy-seven cases of cancer of the lip only seven occurred in females, and of these three were smokers. A moderate use of tobacco may not be injurious, and the employment of holders to cigars or cigarettes, and the use of non-irritant mouthpieces to pipes, will be likely to lessen the mechanical irritation as well as the irritative effect of nicotine. Since the clay pipe has in a great measure been given up, epithelioma of the lip has diminished very materially. I remember well how frequently the disease was seen in my early hospital experience thirty years ago, as compared with the few affected with smoker's lip at the present time.

As showing the effect of irritation from another cause, Helferich* saw a cancer of the lip in a fisherman who constantly held some of his tackle in his lips, as fishermen, both amateur and professional, so constantly do. Sharp edges of teeth or rough plates on artificial teeth are well-known causes of irritation, which frequently set up chronic ulcers ending in epithelioma of the cheek or of the tongue. The removal of such sources of irritation, though obviously wise, is frequently not attended to until a cancerous ulcer is initiated. Needless to say, a more frequent resort to the dentist would obviate this cause.

Mr. H. T. Butlin, in speaking of ulcers of the tongue,

* *Deutsche Medicinische Wochenschrift*, 1890.

says: 'It is impossible for the most practised eye and touch to determine whether the border-line is passed in these delicately-balanced cases, and if within a week of suitable treatment the ulcer, instead of commencing to heal, slowly extends, or even continues as it was, no time should be lost in removing it.' In leucoplakia of the tongue the risk of epithelioma is very great; years may elapse, but sooner or later cancer will almost certainly supervene. Mr. Jonathan Hutchinson says that no medicine or local applications can be relied on to cure true leucoplakia of the tongue, and it is wise to operate in the precancerous condition, and so to remove the source of the danger. The disease is often so extensive that the patient will not consent to total excision, but if not before, directly local induration occurs, and ulcers, warts, or thickening supervene, a radical operation should be strongly urged. It naturally follows, then, that in any chronic ulcers—syphilitic, tuberculous, or dental—of the mouth or tongue, if not yielding to treatment, a free removal of the ulcer in the precancerous condition is decidedly a wise precaution, as it is by a prompt removal of suspicious ulcers or papillomatous masses of the lips, tongue, or cheek that cancer will be prevented.

Scrotal Epithelioma, or chimney-sweeper's cancer, is becoming a disease of the past, as the cause—irritation of the scrotum by soot—has been removed since the use of the long brush for sweeping, and the need no longer exists for the sweep to ascend the chimney. Here legislation has determined the prevention of the disease. As exemplifying the irritative effects of soot as a cause of cancer, I was told of a gardener who developed a cancer at the bend of his right forearm, where he regularly carried a soot basket; and Dr. C. W. MacGillivray tells me that the same effect is produced not infrequently in one of the Edinburgh industries

by the irritative effects of petroleum among those working in the paraffin factories, the effect showing itself as epithelioma of the forearm. This is surely a preventable cause. While the prevention of chimney-sweeper's cancer has been the result of a legislative act, the prevention of penile cancer among the Jewish persuasion is the result of a religious rite; for phimosis is the chief predisposing cause of cancer of the penis, and if circumcision were carried out among the Gentile population, it would doubtless have the same beneficial effect.

Precancerous Skin Conditions.—It is well known that moles and warts on various parts of the body are frequently the starting-point of malignant growths. Nearly all cases of cancer of the skin occur on parts of the body open to irritation—face, hands, genitals, or nipples—and on surfaces where there has been some lesion, such as warts, eczema, sebaceous tumours, ulcers, scars, etc. Where such tumours or spots are in a position that renders them liable to irritation, they should be excised; but whenever they begin to enlarge in any position it is certainly wise to remove them before the onset of malignant disease, to which they are so prone.

As exemplifying the successful results of treatment in these cases (even if the precancerous stage has passed), which, above all others, can be caught at an early stage; at the International Congress on Dermatology at Berlin, in 1904, Dr. Schlesinger said that between 1894 and 1901, in Professor Bergmann's clinic, 171 patients were operated on for cancer of the skin, and of these 76 per cent. had had no recurrence or had died from other causes than cancer.

Precancerous Conditions in the Gall-Bladder and Liver.—In considering preventive treatment, cancer of the gall-bladder, and by continuity of the liver, is of great interest on account of its relationship to gall-stones.

In the long series of operations in the third edition of my work on 'Diseases of the Gall-bladder and Bile-ducts,' there are recorded 56 operations for cancer of the biliary passages (not including cancer of the pancreas); of these, 41, or 73·2 per cent., were associated with cholelithiasis, and although gall-stones were not found at the time of operation in the other 15, the history of intermittent pain extending over a long period is suggestive that some of these may also have owed their origin to the irritation of biliary concretions. Zenker* found gall-stones in 85 per cent. of cancers of the gall-bladder, and Musser, from an analysis of 100 cases, gives the proportion associated with gall-stones as 69 per cent. Courvoisier found gall-stones present in 74 out of 84 cases of primary cancer of the gall-bladder; Brodowski† in 100 per cent.; Jayle‡ in 23 out of 30; Bertrand in 14 out of 15; and Siegert in 95 per cent. of primary, but only in 15 or 16 per cent. of secondary, carcinoma of the gall-bladder. According to Schroeder, 14 per cent. of all cases of gall-stone patients suffer at some time from cancer of the biliary passages; and Naunyn is of opinion that half of the cases of chronic jaundice diagnosed as cholelithiasis are complicated with cancer or are due to cancer alone.

Mr. C. Beadles,§ in a paper before the Pathological Society of London, stated that out of 100 post-mortem examinations at the Cancer Hospital, 4 were cases of primary carcinoma of the liver, and all had calculi in the gall-bladder; 36 had secondary carcinomatous growths in the liver, but there were no gall-stones present in any of them. Of 9 cases of primary carcinoma of the liver at Colney Hatch, 5 were males

* *Deutsches Archiv für Klinische Medicin*, 1899.
† Naunyn, p. 153. ‡ Soc. Anat., 1893.
§ *Lancet*, March 9, 1895.

and 4 were females, and gall-stones were present in 7, being absent in 1 male and 1 female. These facts support the theory of irritation, as does also the fact that the disease occurs much more frequently in women than in men, and in much the same relative proportion as gall-stones. Musser's cases included 75 females and 25 males, while Siegert found that, of 93 cases, 79 were females. Dr. H. D. Rolleston has drawn attention to the fact that out of 36 cases of cancer of the bile-ducts, gall-stones were present in half the number.

These facts establish an undoubted relationship between cholelithiasis and cancer of the gall-bladder and ducts; and as gall-stones produce characteristic symptoms, and are therefore, as a rule, early diagnosed, and since they can be removed in the early stages before serious complications have supervened with extremely little risk (in my experience, extending over some hundreds of operations, less than 1 per cent.), the preventive treatment for cancer of the gall-bladder is obviously removal of the source of irritation. So impressed am I with the importance of this view that although I know the symptoms of gall-stones, which frequently depend on the associated catarrh, can often be relieved for a time by general treatment (though the gall-stones producing the catarrh cannot be removed by medicine), yet I consider it wise to recommend their early removal, not only because it can safely be done, but also because the symptoms are likely to recur and to lead to other complications, and, not least important, because in a considerable percentage of such cases malignant disease will be likely to supervene if the irritation be not removed.

Precancerous Conditions in the Mammary Glands.—In the breast there are certain well-known precancerous conditions, such as eczema of the nipple (first described

by Sir James Paget as a precursor of duct cancer), chronic inflammatory enlargements (the chronic cirrhosing mastitis of Billroth, the interstitial mastitis of English pathologists), cysts and adenomata, and last, but not least, induration following on injury. Mr. W. Roger Williams, quoted by Bosc, says that out of 137 cases of cancer of the breast, 1 out of 4 made statements as to former injury.

Many of these conditions will, if properly and seriously attended to, yield to treatment. Patients have usually themselves to blame in ignoring what they seem to think are trifling ailments, though sometimes the medical attendant may, to avoid frightening his client, make light of the condition, so that the patient feels justified in neglecting any advice. I would say far better to alarm and to cure than to lull into a false sense of security, and have to counsel operation later, when the conditions are less favourable for radical treatment. If eczema of the nipple does not speedily yield to treatment, the nipple should be freely excised, and with it the first portion of the primary ducts. If a chronic inflammatory swelling does not disappear under adequate treatment, the lobule or lobules involved ought to be removed, or, if general, the breast should be ablated. According to Sprengel, 30 out of 100 women attacked with cancer of the breast had had mastitis. Cysts or tumours, even if simple, should be taken away, and if on examination after removal there is any suspicion that the simple stage is passed, the whole breast should be removed, and with it the nearest lymph glands. It ought to be recognised that the watching of a doubtful tumour of the mammary gland until it becomes definitely malignant is an unjustifiable and a blameworthy procedure. Removal in this stage can be done without risk, and while the anxiety of the patient is relieved, the fear of malignancy developing is removed.

Precancerous Conditions of the Stomach. — Precancerous conditions of the stomach are in certain cases distinctly recognisable, and if diagnosed and treated might save many patients from carcinoma. As the stomach is one of the commonest sites of cancer, if even a percentage of cases can be saved from malignant disease by timely treatment, a great advantage will have been gained.

The question of the cancerous transformation of an ulcer of the stomach was first discussed by Cruveilhier in 1839. Rokitansky, in 1840, also recognised the difference between ulcer and cancer, and said that the latter might be implanted upon the former. To Dittrich, writing in 1848, belongs the chief credit for drawing attention to the subject. He described in 160 cases of new growth 6 cases of cancer developing in the immediate vicinity of active or healed ulcers, 2 cases of the association of cancer and ulcer, and 2 cases in which the cancer was limited to a certain part of the margin of the ulcer, the rest remaining sound. Brinton, in 1856, recognised the possibility of the grafting of cancer upon long-standing ulcer.

Lebert, in 1878, considered that the cancerous transformation occurred in 9 per cent. of ulcers; but Zenker, in 1882, expressed a strong opinion that all cases of cancer of the stomach were secondary to ulceration. In the same year Hauser, assistant to Zenker, examined minutely a case of malignant growth in the stomach secondary to ulcer in a patient who had died from pneumonia, and from whom, or of whom, no clinical history could be obtained. In the following year he devoted his inaugural thesis to a further consideration of this and other cases. He attributed the cancerous degeneration in an ulcer to glandular changes caused by inflammation and cicatrization exciting and favouring epithelial proliferation. He called attention for the

first time to the persistence of free hydrochloric acid in the stomach contents in cases of cancer grafted upon ulcer.

In 1889 Rosenheim found in fifty-six cases of cancer, four in which the malignant change was secondary to ulceration. In all these free hydrochloric acid was present, and he therefore considered this as a sign of the first importance. He wrote: 'In cases where the signs of cancer are undoubted the persistence of free hydrochloric acid signifies, *a priori*, that the cancer has developed from an ulcer.' Hayem, in 1901, described a condition of 'prepyloric ulcero-cancer,' in which an ulcer, situated almost invariably close to the pylorus, undergoes a cancerous change, the resulting growth being one of exceptional malignity.

G. Fuetterer, in 1902, made an extensive research into the question of the origin of carcinoma of the stomach from chronic round ulcer. His conclusions, briefly stated, were as follows: (1) If a carcinoma develops from a chronic ulcer of the stomach, then this development occurs from those parts of the edges of the ulcer which are most exposed to mechanical irritation by the contents of the stomach. (2) In the pyloric region it is the lower pyloric margin of the ulcer which is most exposed to mechanical irritation, and from which carcinoma develops. But other parts of the edges may be the ones involved when dilatations and adhesions have changed the position of the organ. (3) Development of carcinoma from ulcers of the stomach in the pyloric region occurs with great frequency, while such a development occurs less often in other parts of the stomach.

In 1903 Audistere recorded examples, and made very careful examination of four personal cases. His conclusions are summed up in the following manner: (1) Simple ulcer of the stomach may be the starting-

point of a cancerous growth, a condition of things which appears to be not infrequent. (2) This malignant degeneration affects, as a rule, the chronic ulcers, especially in the prepyloric region. The change begins in the mucous membrane at the margin of the ulcer. (3) The transformed ulcer presents for a long time almost the same symptoms as a simple ulcer; the differential diagnosis is therefore very difficult. (4) Nevertheless, the diagnosis can be made by noting the persistence of the symptoms, the resistance to treatment, the wasting, and the progressive anæmia. The pain, as a rule, is more severe than in cases of simple ulcer. (5) In cases of cancer, apparently primary, the origin in an ulcer may be suspected if the pain is unusually severe and paroxysmal, if hyperchlorhydria is pronounced, or if hæmatemesis or perforation occurs. The prognosis is decidedly more grave, for the progress of cancer grafted upon an ulcer is more rapid, and bleeding or perforation is liable to occur.

If these conclusions are correct, and my experience tells me they are, then it is quite clear that we must in all cases in which an ulcer of the stomach resists treatment, or its scar narrows the pylorus, recommend an early gastro-enterostomy or excision of the ulcer, in order to prevent the development of carcinoma. If a gastro-enterostomy has been performed, then the mechanical irritation of the ulcer in the pyloric region by food is reduced, and the friction necessary to produce a carcinoma will probably not occur. The estimates of the frequency of this malignant implantation upon a chronic ulcer vary greatly. The number of carcinomata beginning in chronic ulcer is reckoned at 3 per cent. by Haberlin, Fenwick, Plange, and Berthold; 4 per cent. by Wollmans; 6 per cent. by Rosenheim and Hauser; 9 per cent. by Lebert; and 14 per cent. by Sonicksen. Zenker, as already mentioned, believes

that all, or almost all, carcinomata are secondary to ulcer. In no less than thirty-eight out of sixty-four cases (59·3 per cent.) of cancer of the stomach on which I have performed gastro-enterostomy for the relief of symptoms, the disease having advanced too far for gastrectomy, the long history of painful dyspepsia suggested the possibility of ulcer preceding the onset of malignant disease.

The origin of carcinoma in an ulcer of the stomach is only another instance added to many of which we have knowledge, of the effect of persisting irritation in establishing malignant changes. Carcinoma occurs most frequently in those areas in which the ulcers chiefly lie. Whatever the frequency of the malignant change in chronic ulcer may prove to be, the fact of its occurrence should be an additional incentive to the earlier surgical treatment of ulcers which prove rebellious.

I firmly believe that greater regard for oral asepsis and more careful attention to the teeth would save much stomach disease, and I think one of the chief causes of the frequency of gastric ulcers among the mill operatives of Yorkshire and Lancashire is carious teeth, with its accompaniment oral sepsis. I am also firmly convinced that the early and thorough medical treatment of gastric ulcers and the surgical treatment of those that prove rebellious, either by gastro-enterostomy or excision, would do much to lessen the amount of cancer of the stomach.

Precancerous Conditions in the Pelvic Organs of Women.—Cancer is, perhaps, more commonly noticed to supervene on a recognisable precancerous condition in the uterus than is observable in any other organ, and the frequency with which cancer develops in multiparæ, and especially in those who have had lacerated cervix, points distinctly to cause and effect. The frequent

advent of cancer on old scars is well known in various parts of the body, especially in those placed where their nutrition is liable to disturbance, as in the scars of burns. Now, in the cervix uteri we see the scars of old ulcers, the result of laceration in childbed, often remaining untreated for years, and leading to constant distress, with backache, leucorrhœa, and other well-known symptoms. Only a few months ago I saw a case of this kind pass from the simple to the malignant stage; an operation which was declined on both occasions when I saw the patient was only consented to six months later, after epithelioma had developed.

It is interesting to note that cancer of the cervix uteri is infrequent in sterile women whose cervical canal has not been subjected to the lacerations which often occur in parturition, whereas cancer of the body of the uterus is of equal frequency in those who have and have not borne children. More careful attention to post-puerperal conditions and the performance of the simple operation described by Emmett would remove this source of danger in a great number of cases. Bernard* has reported six cases of cancer of the uterus, apparently due to the irritation of pessaries injudiciously used. Uterine adenomata doubtless predispose to cancer of the uterus, and the coexistence of mucous polypi and epithelioma is not without its significance, as early operation in such cases would probably prevent the onset of malignant disease. The malignant degeneration of uterine myomata is probably commoner than is generally thought, and on several occasions I have removed what was supposed to be a simple myoma of the uterus, and found a sarcomatous change going on. Pilliet and Costes† state that they saw this occurrence eleven times in twenty-one cases. Now, seeing that myoma of the uterus can be removed

* *Thèse de Paris*, 1895. † Société de Biologie, 1894.

by hysterectomy with very small risk, I make it a rule whenever a myoma begins to enlarge at, or near, or after the menopause to advise its removal; while I hold with those writers who recommend the removal of 'fibroids' whenever the symptoms of hæmorrhage, pressure, or pain seriously interfere with health or comfort. Surely it is better to accept a risk of from 2 to 3 per cent. with a view to the removal of a disease that in itself promises to endanger life, and which in a certain percentage of cases undergoes a malignant change, than to have to operate when cancer or sarcoma has already developed, and when the chances of recovery from operation will be seriously diminished, and the chances of permanent cure very much lessened.

The fact that malignant disease of the ovary begins in the first place as a small tumour, often cystic, and that cystic disease is apt to undergo malignant degeneration, affords good ground for recommending operation at an early stage in the case of any ovarian tumour, when perchance the disease may be caught in a precancerous condition, or should malignant disease have already commenced it will be limited and removable. Dermoids may undoubtedly undergo malignant transformation, and knowing their structure, it is a wonder that this does not occur more frequently.

Papilloma of the ovary naturally tends to malignancy, though at first it is simple, and when removed thoroughly does not recur; even if in these cases the peritoneal surface has already become warty owing to rupture of the cyst and ascites has developed, the removal of the growth has, in my experience, in a number of cases led to recovery, for with the removal of the original tumour the peritoneal warts have shrivelled and the ascites has disappeared. I recently saw a good example of two sisters affected at the same time with papilloma of the left ovary passing on to malignancy. Unfortunately, in

both cases an examination had not been submitted to until the presence of ascites and secondary tumour demanded attention, though in each case the symptoms had been noticed for quite six months. Had they been operated on when pain and pressure first drew attention to something being wrong, a cure could probably have been effected in both. Seeing that ovarian tumours have frequently long pedicles, and that early removal means a very complete and perfect operation, almost devoid of risk, it is surely better to take these cases at the earliest possible moment, and as soon as the diagnosis is made to remove them, thus saving the patient the sufferings incident to a growing abdominal tumour, and at the same time removing the dangers of the supervention of more serious malignant disease.

Precancerous Conditions in the Intestines.—Though on account of its inaccessibility to direct examination a precancerous condition is difficult to diagnose in the upper intestines generally, it will be found in many cases that there have been premonitory symptoms pointing to ulcer or colitis. Irregular pains, the passage of mucus or blood, and constipation possibly alternating with diarrhœa, should rouse the suspicion of organic disease, and lead to a careful physical investigation that may reveal irregular peristalsis or possibly a tumour, which, even if not caught in the precancerous stage, will be recognised and treated in the incipient and curable stage of cancer.

Any disease high up in the rectum, or in the lower loop of the sigmoid flexure, is quite out of reach of the finger, and cannot be palpated through the abdominal wall unless of considerable size; here, as a rule, disease has had to be diagnosed by symptoms alone, and symptoms sufficiently definite to warrant exploration only come on when the disease has passed the most favourable time for radical treatment. Fortunately,

this region of reproach no longer remains, as by means of the electric sigmoidoscope invented by Professor Strauss, of Berlin, to which attention was drawn by Mr. J. P. L. Mummery, a clear view of every portion of the inside of the bowel may be obtained even as high as the top of the sigmoid flexure, and this without any inconvenience or danger to the patient. It will do away with the need for exploratory operations in this region for mere diagnostic purposes, and will enable disease more frequently to be removed in the precancerous condition. I have recently seen a case where, from the symptoms, cancer was strongly suspected, though examination by the finger and by the ordinary proto-scope left me still in doubt; an examination by the electric sigmoidoscope showed a papillomatous condition high up in the rectum surrounded by inflamed mucous membrane—a condition that might have been the precursor of cancer, but which was capable of removal, and which I have since successfully treated. In the rectum the earlier treatment of hæmorrhoids and ulcers, and of all chronic sources of irritation, is obviously rational and advisable, and may sometimes be the means of preventing the onset of malignant disease.

Radical Treatment of Cancer.

By the radical treatment of cancer I mean the entire removal of the disease at an early period, together with a wide margin of healthy tissue and, if practicable, the nearest lymphatic glands. In estimating what may be done for cancer by radical treatment, I do not think it sufficient simply to consider the mortality of any special operation, as has so often been done, when operative success was used as a cloak to mask therapeutic failure, but I want to know the ultimate results after the lapse of years of operations undertaken at an early stage of

the disease where the cancer had been freely and widely excised. Nor do I think it fair to surgery to average the statistics of all surgeons, or even of all hospitals, but rather to select the statistics of operators interested in special lines of work, who can show what is capable of being done in their own particular region. The levelling process should, from my point of view, be a levelling up to the best, and not an averaging down to the worst.

May I give an example? In estimating the mortality of gastro-enterostomy for a work on which I have been recently engaged, I had occasion to examine the statistics of a large number of hospitals and of many individuals, with the result that I found the mortality varying in different hands from 3 to 50 per cent.; and almost exactly similar observations were made with regard to the operation of cholecystotomy, the mortality varying between 1 and 30 per cent. Now, it would be manifestly unfair to say that the mortality of gastro-enterostomy is 50 per cent., and of cholecystotomy 30 per cent., because certain surgeons have been unfortunate, when other experienced operators in England, America, and the continent of Europe can show in some hundreds of cases that gastro-enterostomy can be done with less than 5 per cent. mortality, and cholecystotomy with only 1 per cent.

Cancer of the Breast.—The radical treatment of cancer of the breast may be conveniently taken first, as the subject has been considered from the statistical point of view more carefully and completely than have operations for cancer in any other part of the body. Personally, in my experience in hospital and in private practice, I can point to a very large number of radical mammary operations, and I have been astonished to find how many, especially of the private cases, where, through the kindness of the family physicians, I have been able

to trace the after-histories, have survived beyond the three years' limit, and how many are still living and well many years after operation.

The following is a brief account of all the operations for cancer of the breast which I have done in private; they are sixty-two in number:

1 alive and well 12 years after operation.
1 ,, ,, 10 ,, ,,
1 ,, ,, 9 ,, ,,
2 ,, ,, 8 ,, ,,
1 ,, ,, 7½ ,, ,,
1 ,, ,, 7 ,, ,,
3 ,, ,, 6½ ,, ,,
1 ,, ,, 6 ,, ,,
2 ,, ,, 4 ,, ,,
1 ,, ,, 3 ,, ,,
3 ,, ,, 2½ ,, ,,
1 ,, ,, 2 ,, ,,
2 ,, ,, 1½ ,, ,,

1 lived 20 years and died from chronic bronchitis.
1 ,, 2 ,, ,, meningitis
1 ,, 2 ,, ,, phthisis
1 ,, 1 year ,, enteric fever
1 ,, 6 months ,, apoplexy
} without recurrence.
8 cannot be traced.

The following are cases that recurred:

1 lived 6 years and had recurrence of the disease.
2 ,, 5 ,, ,, ,, ,,
2 ,, 4 ,, ,, ,, ,,
1 ,, 3½ ,, ,, ,, ,,
2 ,, 3 ,, ,, ,, ,,
2 ,, 2½ ,, ,, ,, ,,
5 ,, 2 ,, ,, ,, ,,
9 ,, 1 ,, ,, ,, ,,
4 ,, 6 months ,, ,, ,,
1 ,, 4 ,, ,, ,, ,,

There was no operative mortality. Thus, 23 survived the three years' limit; 20 are now alive and well at

periods up to twelve years after operation (others operated on within a year are not included in the statistics); 5 died from other diseases without recurrence of cancer, 1 twenty years after the major operation; 29 had recurrence, though in 8 it was over three years subsequently to operation; 8 could not be traced.

My early operations were not so thorough as those done in later years, otherwise I feel sure that the recurrences would have been fewer. The successful removal of recurrent growths was well shown in a case in which a patient survived over twenty years after her first operation, during which time she underwent more than 20 minor operations for the removal of small recurrent nodules as soon as they made their appearance. She ultimately died from chronic bronchitis at an advanced age. My recollection as a student of operations for cancer of the breast was that they consisted of local removals of the tumour of the most imperfect description, and the presence of glands in the axilla was by some surgeons considered a bar to interference, for to open up the axilla in those days was no trifling matter. Following on Moore's work at the Middlesex Hospital came an important paper by my old friend and colleague Sir William Mitchell Banks, whose recent death we all sincerely lament. This paper, advocating early and free removal, and the clearing out of the axilla in all cases, gave a great impetus to the radical treatment of mammary cancer. In 1880 Samuel W. Gross wrote: 'The wiser course is to explore the axilla, even if its glands cannot be detected from without'—a view which is now universal among surgeons. In the Lettsomian Lectures for 1900 Banks gave the results of 175 patients operated on for cancer of the breast, of whom 108 had remained free from local recurrence. Of the 108, 73 lived over three years, as follows: Cases that lived between

three and six years after operation, 40; cases that lived between seven and fourteen years after operation, 28; and cases that lived between sixteen and twenty-one years after operation, 5.

To one of the distinguished honorary Fellows of this College, Dr. Halsted, of Baltimore, belongs the distinction of carrying operations for cancer of the breast to their widest limits, and when I had the opportunity of observing that eminent surgeon operating in the Johns Hopkins Hospital some years ago, I felt that his thorough work ought to show positively whether extensive removal was to be the operation of the future. Dr. Halsted has been so kind as to furnish me with his completed statistics (prepared by Dr. Bloodgood) from 1889 to 1902, which will, I think, convince the greatest sceptic as to what may be done by thorough and complete work, and without a doubt it establishes the fact that 'what is worth doing is worth doing well.' The complete statistics, too valuable to omit, but too long to read now, will be published as an addendum.

The following is a brief account of the ultimate result of 161 patients admitted to the clinic with operable primary tumours of the breast on which complete operations were performed between June, 1889, and August, 1899. In August, 1902, 60 patients were living and cured; 7 had lived over three years and died from other causes, and 2 had died from other causes within the three years' limit, necropsy showing no signs of recurrence. This gives 69 cases, or 42·8 per cent., positively cured. An analysis of the 161 patients shows that 83, or 51·5 per cent., survived the three years' limit. The operations performed consisted of complete excision of the breast, both pectoral muscles and axillary contents in one piece, and complete excision of the contents of the supraclavicular fossa. During thirteen years 305 patients with primary and 38 with secondary

tumours were admitted to the clinic, and of these it is worth noting that 83, or 27·2 per cent., were inoperable owing to delay in seeking surgical assistance. It is also of interest to note that in no case was local recurrence or internal metastasis observed after three years.

Mr. T. Bryant has recorded from his own experience 46 cases of amputation of the breast for cancer in which the patients survived the primary operation from five to thirty-two years. In 17 cases there had been no recurrence. Of these, 13 were alive and well 5, 6, 8, 8, 8, 9, 9, 9, 10, 10, 14, 14, and 16 years later respectively, and 4 had died from other causes without recurrence after 5, 13, 14, and 20 years. In 3 recurrence took place in the scar of the primary operation, and a secondary operation was performed a year later; 2 of these were alive and well 5 years, and one 10 years after the primary operation. In 16 other cases there was recurrence at the site of the primary operation, and in all but 3 a secondary operation was performed. These survived the primary operation 6, 7, 12, 12, 30, 10, 16, 13, 30, 10, 32, 12, 9, 12, 12, and 10 years respectively. A number of these patients were living and well at these periods subsequently to operation. In 10 cases recurrence took place in the second breast, but the patients were living 10, 24, 2, 23, 7, 10, 4, 4, 13, and 2 years respectively after the first operation, and 4 of them were in good health and free from recurrence after the removal of both breasts at 10, 7, 4, and 13 years respectively.

My friend Mr. Pridgin Teale has told me of seventeen instances in which his patients have survived from eight to twenty-six years. Mr. Marmaduke Sheild, in a paper read before the Royal Medical and Chirurgical Society in 1897, collected forty-four cases from various sources where no recurrence took place after the primary operation for periods varying from six to twenty years. Some

of Mr. Teale's cases already referred to were included in these. Mr. Sheild collected some cases of remarkable prolongation of life after repeated operations; for instance, Dr. C. J. Cullingworth's case: six years' repeated operations and then forty-nine years of health; Mr. Edmund Owen's case, in which three early operations were followed by twenty years' immunity. A case of my own that had been operated on by Mr. Morant Baker, and afterwards by Mr. F. Durham, and in which I had performed several subsequent operations, the patient living for about twenty years after the first operation.

My colleague, Mr. W. Watson Cheyne, adopting a most thorough and radical operation on lines similar to those of Dr. Halsted, shows very satisfactory results, as the following figures will show: Of thirty-four operations for cancer of the breast in private patients, seventeen were alive after periods varying from six to thirteen years.* He says that, taking the average of all cases operated on, favourable or otherwise, something like 50 per cent. will remain well for a number of years, and in those cases in which the tumour is small and well limited, and the glandular infection is slight, the proportion of successes will be considerably greater. In these views I most thoroughly agree. Professor Rodman, in speaking of the surgical treatment of cancer of the breast, said that of 629 cases operated on by American surgeons, 44·16 per cent. had survived the three years' limit.

This large series of cases proves beyond doubt that cancer of the breast, if operated on early and with thoroughness, is by no means the incurable disease that many still think, but that in a very large percentage—50 or more—the patients may look for over three years' respite, and in 40 per cent. to a much longer period of freedom, and many to a genuine cure; for there can be no question of cancer being a local disease at its com-

* *The Lancet*, March 12, 1904, p. 699.

mencement, and if it can be radically removed there is no reason for any further development from the primary focus.

Radical Treatment of Cancer of the Stomach.

The stomach is one of the most frequent sites of cancer, and it is interesting to note that in spite of the frequency of carcinoma of the breast and the uterus in women, cancer of the stomach carries off a greater number of victims even among women than either. It was only in 1879 that Péan performed his first pylorectomy for cancer of the stomach, and in 1881 when Billroth did the first successful operation, up to which time and long after the disease was held by many to be incurable.

At first sight it would appear to be hopeless to expect that eradication of the disease could be performed in an organ situated as the stomach is, and so freely supplied with bloodvessels and lymphatics, yet a careful study of its anatomy shows it to be fixed only at the cardiac extremity, and with the exception of that part the remainder is as freely accessible for operative purposes as are the intestines; moreover, the disease, if caught early, can be as completely removed as cancer of the colon. I can point to a number of patients in good health on whom I performed partial removal of the stomach years ago, and to one especially, a man, aged forty-two years, from whom I removed the whole stomach except a small portion of the dome and the cardiac orifice four years ago. He was reported last month to be robust and well, to be able to take quite ordinary diet, and to have followed his business without any disability from within two months of his operation up to the present time.

In another case, that of a woman, aged fifty-four years, a partial gastrectomy was performed at the same

time as removal of the gall-bladder, both organs being involved in cancer. She remains well now in the fifth year after operation.

In another case the patient, a woman, aged fifty years, remains well nearly four years after the removal of the centre of a cancerous hourglass stomach, the proximal and distal healthy portions having been joined over a decalcified bone bobbin. A number of other cases might be referred to in which the patients are apparently in perfect health after radical operations performed one to three years ago.

It must be borne in mind that for a radical operation to be successfully performed it is necessary that there should be early diagnosis and immediate operation. It is useless to wait until a tumour develops, or until coffee-ground vomit shows that ulceration has occurred. In that way valuable time is lost, glandular infection occurs, and the extension of the disease makes an operation more difficult to perform, at a time when the patient is less able to bear it on account of anæmia and exhaustion. As the early symptoms are often equivocal and uncertain, we must be prepared to confirm the diagnosis by exploration, and then be prepared to go on and perform a radical operation. Medical treatment cannot cure, and can do very little even to prolong life; surgery offers the only chance of cure.

Whenever a patient at or after middle age complains somewhat suddenly of indefinite gastric uneasiness, pain, and vomiting, followed by progressive loss of weight and energy, and associated with anæmia, the possibility of cancer of the stomach should be recognised, and in a suspected case, if no improvement takes place in a few weeks at most, an exploratory operation is more than justified. As Osler says, the important aid of an exploratory operation should be more frequently advised. Our diagnosis can only be rendered certain by

a digital examination, which may be effected through a small incision that can, if needful, be made under cocaine anæsthesia with little, if any, risk. It may be discovered that the disease is manifestly not malignant, and that some curative operation can be done, as in cases I have reported in 'Diseases of the Stomach' and in various published lectures. Or it may be discovered that the disease resembles malignancy both in its history and naked-eye appearance, and is yet, if we may judge from results, apparently not malignant, as in a number of cases treated by gastro-enterostomy that I have reported, which were at the time of operation extremely ill, and supposed to be suffering from cancer of the stomach, but who, as the result of surgical treatment, are now in good health.

I would lay particular stress on this class of cases, for I think it serves to explain some misconception about cancer generally. It would be easy to raise a claim to having cured cancer of the stomach by gastro-enterostomy, but I do not for one moment believe that any of these cases were more than inflammatory tumours formed around chronic ulcers; nevertheless, I have no doubt that they would have proved fatal just as certainly as if they had been cancer had no operation been done. Or it may be found that the disease is cancer in an early stage, and that a radical removal is possible.

The cases which I have mentioned are sufficient to show that removal at an early stage offers good prospects of immediate recovery and a fair probability of cure, and they further show that excision of even a considerable portion of the stomach may be something more than a palliative operation. I think it justifies me in saying that, although it is better to have cancer diagnosed and operated on early, yet we need not take the pessimistic view which has been adopted by some

surgeons, that if a tumour be manifest, it is too late to perform a radical operation.

Professor Kocher, of Berne, one of the distinguished honorary Fellows of the College, has been so kind as to give me the results of his gastrectomies for cancer up to the present; the following is the report as sent to me in a letter dated October 14, 1904:

'I have performed 97 resections of the stomach for cancer and sarcoma (one only for sarcoma). Of these, 52 cases (operated on between 1881 and 1898), 65·4 per cent., recovered, 34·6 per cent. died. From 1898 to August, 1904, 45 cases have been operated on, with 82·2 per cent. recoveries, and 17·7 per cent. deaths. Of these last 8 cases which died (*i.e.*, 17·7 per cent.), 1 died from perforation at the point of union, 1 from perforation of the transverse colon in consequence of local gangrene, and 6 cases from pneumonia, whilst locally everything went on in a normal way. Without these cases dying from complications existing for the most part before operation (bronchitis, etc.), we should have had only 5·1 per cent. of deaths directly from operation. With regard to definite results, 51 of the whole series died later, living up to six years (in the mean 18·7 months), much longer than after gastro-enterostomy and in much better condition. Twenty cases are still living, 2 for several months only, 1 for ten months, 6 for one year, 1 for two years and two months, 1 for two years and eight months, 1 for three years and eight months, 3 for from five to five and a half years, 1 for six years, 1 for seven years, 1 for eleven years, and 1 for sixteen and a quarter years. All the patients except 1 of the 20 living are in very good health. Dr. Matti and I have seen most of these cases ourselves, and Dr. Matti has examined them carefully as to the functions of the stomach; the others have been examined by their local doctors. We may be sure that a good many of our

cases have given a radical cure. All of the cases living except one have been operated on by our method of resection with gastro-duodenostomy. This method, applied in 71 of the cases, has also given the best result as to immediate mortality, that is to say; 16·9 per cent. of deaths, and 83·1 per cent. of recoveries.'

Dr. W. H. Mayo and Dr. C. Mayo* have performed 43 radical operations for malignant disease of the stomach, with 7 deaths—*i.e.*, 16·2 per cent.; all but 2 of those who recovered lived over a year, 1 lived three years and seven months, and several are well more than two years after operation. McDonald, quoted by Mayo, was able to collect 43 cases definitely cured by operation. Murphy collected 189 cases, with 28 deaths, of which 17 survived over three years. Of the partial gastrectomies performed by myself and Mr. B. G. A. Moynihan before 1897, the mortality was 75 per cent., whereas since 1896 it has only been 12·5 per cent.

Removal of Cancer of the Tongue.—I remember, as a student, seeing a number of removals of the tongue by the écraseur, there being no question of removal of the glands or of the floor of the mouth. In nearly every case recurrence took place within a few months and the operation was falling into disfavour, when Whitehead invented his operation of removing the tongue, widely with scissors, and Kocher's operation of clearing out the tongue, floor of the mouth, and the submaxillary and lymphatic glands also came to be practised. These operations brought a marked change, and it was soon found that a good percentage of patients operated on remained free from disease for some time and others were really cured. I can point to a case well seven years after operation, to another five years, and to others over three years, and it is of interest to note that in these cases very good power of speech

* *Medical News*, April 16, 1904.

is retained by the patients. My colleague, Mr. H. T. Butlin, putting together his own cases and those of Kronlein, Kocher, and Whitehead, found that 40 out of 199 remained free from disease, or had died from some other cause than cancer more than three years after the last operation.

Mr. Walter Whitehead has excised the tongue independently of other complications on 50 occasions without a death, and in 116 operations the mortality was only 2·5 per cent. He refers to cases living thirteen, twelve, and eleven years after operation, and makes the statement that, 'provided the tongue and adjacent affected parts are removed thoroughly and early, there exists a fair prospect of life being extended beyond the three-year limit.' Mr. Stanley Boyd, out of 26 cases, reported 1 alive eleven years after operation, 1 eight and a quarter years, 1 five years, 1 four and three-quarter years, 1 four and a quarter years, 1 four years, and others in which life was prolonged for shorter periods; in over one-fourth of his cases life was prolonged beyond the three-year limit. I have already freely expressed my views on the question of attacking diseases of the tongue in the precancerous stage; if only this were done more frequently, and if, even when cancer has developed, time were not lost in dosing patients with iodides week after week until the disease has extended too widely, there would be a much brighter tale to tell.

Cancer of the Larynx.—What could at first sight appear more hopeless for radical treatment than cancer of the larynx, which formerly used only to be treated palliatively by tracheotomy, later was removed by the formidable operation of complete laryngectomy with a very high mortality, and, lastly, has been most successfully dealt with when seen early by the much more simple operation of thyrotomy and removal of the diseased part, as advocated by Mr. Butlin in 1889?

My friend Sir Felix Semon has been kind enough to give me the statistics of his thyrotomy operations, the results of which are remarkable, and which prove up to the hilt the special point which I want to insist on in this lecture, that if we get cancer cases sent to us sufficiently early, operation is not merely palliative, but curative. Sir Felix Semon says: 'I can now summarize my results to the effect that out of 18 cases of undoubted malignant disease of the larynx which I have operated upon by thyrotomy between June 2, 1891, and July 29, 1902, 15—that is, 85 per cent.—were permanently cured. Three of these patients died several years after the operation from affections altogether unconnected with the original disease—one, six years after the operation from an acute abdominal affection, the second three and a quarter years after the operation from embolism of the heart or lungs, the third four years after the operation from pneumonia. The remaining twelve are now alive and well, whilst the vocal results, with the exception of a few cases in which it was necessary to remove both vocal cords, are surprisingly good.'

My personal experience of the disease in this situation is necessarily small, but I venture to relate the following interesting case: In July of this year a gentleman of fifty, from whom I removed a cancer of the tongue five years ago and a cancer of the vocal cord by thyrotomy three years ago, came to see me, and although he had only half a tongue, half an epiglottis, and one vocal cord, he could speak perfectly well. He said that his health was very good, and that he was able to carry on his professional work without any disability. Mr. Sheild tells me that he has 4 cases under observation of epithelioma of the vocal cord freely removed in an early stage by thyrotomy, all in men over forty years of age. Of these, 1 is well six years, 1 four years, 1 nearly four years, and 1 two years later.

Professor Kocher has been kind enough to furnish me with the statistics of his cases, that were evidently more extensive, and had to be treated by the more formidable operation of partial and complete laryngectomy. Of these, eight are radically cured. He says: 'The number of my excisions of the larynx for malignant growths is 30, of which 29 were for cancer and 1 for sarcoma. The results are that 8 cases offer a radical cure; that is to say, 26·6 per cent. These include the one case of sarcoma. Of 6 cases of total excision, only 1 survived two years, and died from pneumonia. Of 9 unilateral excisions (one-half of the larynx), 2 died without return of the disease after one and a half years; 2 are living in perfect health after six and eight years respectively. Of 10 circumscribed excisions, 2 are still in good health after six and six and a quarter years respectively. Of 4 cases operated on by pharyngotomy subhyoidea, 2 are quite well after fourteen months and ten years. Out of the cases where the carcinoma was still circumscribed and no lymphatic glands affected, one-half of all cases have been definitely cured. All depends upon early diagnosis and early surgical aid.'

Cancer of the Intestine.—Although in this situation cancer is far from uncommon, it is only comparatively recently that radical operations have been performed on the intestinal tract at an early stage, with a view not simply to relieve, but to cure the disease. Intestinal cancer is nearly always in the form of columnar-celled carcinoma, and, as shown by Haussman,* even when it has advanced to a fatal issue, the disease is limited to the gut in over 40 per cent. of cases. In 112 necropsies the disease had become generalized in 21, had involved the glands in 36, and in 55 was limited to the bowel. I believe that all the cases where the disease is limited ought to be capable of cure by enterectomy if operated

* *Thèse de Paris*, 1882.

on early. It should also be borne in mind that even if enlarged glands be present it does not necessarily mean that they are cancerous, for both clinical and pathological experience have shown the contrary. In some of my own cases enterectomy, despite the presence of enlarged glands, has resulted in cure.

Formerly palliative procedures, such as colotomy, marked the limits of surgical work, and operation was deferred as long as possible, for the obvious reason that at best the old procedure of lumbar colotomy was only to be endured as a last resort. Contrary to what used to be thought, the intestines present conditions very favourable to curative operations, and I think I shall be able to show from my own experience, as well as from the experience of others, that in enterectomy or colectomy performed at an early stage, when the disease is limited to the bowel, we have a most satisfactory operation, both as to immediate and ultimate results.

I have performed enterectomy on over 40 occasions. Of these, 31 have been for growth, of which 6 died. As to the ultimate issue, it is almost impossible to trace the hospital cases, though 2 were heard of as being well four and a half and two years later. Of 21 operations for tumour done in private there were 17 recoveries. Of these, 1 is alive and well ten years later, after excision of the sigmoid flexure, and she has had two children since her operation; 1 is alive and well four and a half years, 3 are well three and a half years, 2 three years, and 1 one year after operation, without sign of recurrence. Others lived, 1 for three years, 3 for two years, and 5 for lesser periods, and died from recurrence.

It cannot be too strongly insisted on that in all chronic ailments associated with dyspepsia or constipation or abdominal pain a careful examination of the abdomen should be made in order to discover disease at

the earliest possible moment, for to wait until obstruction occurs is to lose the favourable opportunity and to add very seriously to the danger of any operation.

In operating I make a very wide sweep of the disease, going several inches beyond the growth above and below, and removing the lymphatics and glands belonging to the affected parts of the bowel as far as possible. Personally, I prefer to use my decalcified bone bobbins, but I have employed with success the simple suture and the Murphy button, though I still feel that by means of the bobbin used as a temporary splint around which to apply sutures I can perform a safer operation than by any other method.

The operations performed before the perfection of the technique of intestinal surgery, massed together and said to furnish an average mortality of from 30 to 40 per cent., ought not to be taken as an example of what can be done to-day. For instance, Mr. Bilton Pollard published* reports of seven colectomies without a death, and in none of the cases had there been recurrence of the disease. One patient lived for four years, and died of heart disease, and the others were living at periods of four years, two and a half years two years, and two months, nine months, six months, and two months respectively after operation.

Professor C. E. Morton, employing the decalcified bone bobbin, has performed seven consecutive colectomies without a death; and of these, one patient has lived five years after operation, one is living and well three and a half years after, and two patients are well one year after. Recurrence took place one year and nine months after operation in one case, on e and a half years after in another case, and one year later in a third case.

My friend, Mr. H. Littlewood,† reported fourteen

* *British Medical Journal*, January 23, 1904, p. 175.

† *The Lancet*, May 30, 1903, p. 1511.

colectomies with ten recoveries, several of the patients being well three or more years later. Von Mikulicz has written: 'In my experience the present results after operations for malignant tumours of the large intestine are very favourable—more so than is generally supposed. I think we should point out this fact to physicians, who are still very sceptical about this operation.' The conjoint statistics of Mikulicz and Körte show that of twenty-four cases nine were under observation for four years after operation, and some much longer; one seventeen years without recurrence.

Cancer of the Rectum.—This is a disease that of all others lends itself to a radical cure, for it can be recognised early. It is safe to say now, that there is no part of the alimentary canal that cannot be reached for a radical operation, for even in the rectum that part which cannot be reached from the perineum can be got at from above by opening the abdomen with the patient in the Trendelenburg position, as was so ably demonstrated by my friend Sir Charles Ball from this chair last year; and fortunately there need be no doubt about the nature and extent of the disease in this region, for the electric proctoscope enables the lower bowel to be examined by the eye without difficulty to a height of 30 centimetres.

Among other notable examples of radical cure, I can point to one patient living in perfect health, and with good control of the bowel, from whom I removed a cancer of the rectum by proctectomy twelve years ago, to another eight years, and to others who are well and enjoying life several years after operation. My colleague, Mr. Clinton T. Dent, has recently recorded the case of a patient who died from recurrence in the liver twenty-one years after removal of a cancer of the rectum.

Delay in recommending operation in these cases is

inexcusable, for they are readily recognised, and if they could be operated on when the disease is limited to the bowel, the success, immediate and remote, would be very considerable. Mr. Harrison Cripps has recorded 38 perineal proctectomies, with 3 deaths, a mortality of 7·8 per cent. Of these, 2 were well from one to three years, and 7 more than three years after operation. In no case did recurrence take place after three years.

Mr. Percy Furnivall has tabulated Duplay's and Reclus's collected cases as follows:

4	lived	13, 14, 16, and 16½	years	after operation.
3	,,	11	years	after operation.
4	,,	8	,,	,,
4	,,	7	,,	,,
6	,,	6	,,	,,
13	,,	5	,,	,,
19	,,	4	,,	,,
15	,,	3	,,	,,

My colleague, Mr. W. Watson Cheyne, says:* 'I should reckon the mortality of excision of the rectum is from 5 to 10 per cent., as the result of recent improvements in the operation. It is a very valuable procedure in suitable cases, and the risk run by the patient is not at all excessive, seeing the advantages that may be gained.

Cancer of the Gall-bladder and Liver.—If the favourable precancerous period has passed, and malignant disease has actually supervened, can anything be done for the sufferers? At first sight it would appear that cancer of the gall-bladder is an utterly hopeless disease, especially when it has extended to the liver. Fortunately, however, I am able, from my own experience, to show that such a view would be a fallacy. I have operated on 12 cases of cancer of the gall-bladder,

* *British Medical Journal*, June 13, 1903, p. 1361.

and in 11 the disease extended to the liver, forming a tumour of some size. Of these 12 cases, 10 recovered from the operation and lived for varying periods. Five of these patients are at the present time alive and in good health at periods of $5\frac{1}{2}$, 5, $4\frac{1}{2}$, 4, and $1\frac{1}{4}$ years respectively subsequent to operation.

I want it clearly to be understood that these were cases of primary cancer of the gall-bladder due to the irritation of gall-stones, and that the liver growth was due to extension by continuity, not to secondary deposits in that organ. In one case I was able to remove as much as half a pound of the liver with success. Needless to say, it would be much better, by removal of the gall-stones at an earlier stage, to prevent cancer than to have to perform an extensive operation at a later stage. Now that cholecystectomy is more frequently performed in the case of seriously damaged gall-bladders during the performance of operations for cholelithiasis, I expect we shall find that cancer will be more often found at an early stage and successfully taken away.

Cancer of the Lip.—Even if the precancerous stage has passed, a free removal of the disease at an early stage, and while it is still local, enables a very good prognosis to be given. Mr. Butlin's analysis of 114 cases of epithelioma of the lip from the Göttingen clinic showed that 53 per cent. of cases were alive and well, or had died from other diseases, more than three years after removal, and of these 12 had lived for at least twelve years and 1 for eighteen years after operation. Dr. Loos analyzed the returns of the Tübingen Hospital from 1843 to 1885, and found that the cures averaged 51 per cent., but in the years from 1885 to 1898 they had increased to 66 per cent. Mr. Sheild has told me of one patient from whom he removed an epithelioma of the lip with submental glands twenty years ago.

The patient died last year at the age of eighty-one years, without recurrence.

Cancer of the Penis.—In epithelioma of the penis it is satisfactory to know that amputation yields a cure of one-third of the cases operated on. Mr. Butlin gives cases under his own observation living and well from six to ten years later, and of some collected cases well for nearly twenty years. Mr. Sheild has told me of four cases of his well after 9, 7, 6½, and 3 years respectively, and I can point to one case well after 15 years, and to others at lesser periods.

Cancer of the Uterus.—As cancer of the uterus is one of the most distressing manifestations of malignant disease, it is a comfort to know that the pessimistic views advanced by a prominent gynæcologist about three years ago need to be taken with considerable modification. I have already said that much may be done to prevent this dread disease by careful surgical treatment, and that without risk. Even when the pre-cancerous stage is passed, if women could be educated to the fact that were they to seek advice earlier, and, in fact, whenever an abnormal sanguineous discharge appears apart from a menstrual period, in a very large percentage of cases the cancer would be recognised in its incipient condition when the disease is local, and removal could be carried out and cure effected. In order to prove these statements I wrote to the medical attendants of all the private patients on whom I had operated, and was much gratified to find many not only living but in robust health, from whom I had removed cancer of the uterus by complete or partial hysterectomy years ago. I made an attempt to get the statistics of my hospital patients, but found it absolutely impracticable, as nearly all the letters were returned on account of change of address; so that the statistics are limited to private patients, and as these cases were nearly all

seen at an early stage of the disease, and the growth was examined microscopically after removal, I think they form a valuable addition to the statistics of uterine cancer, for every case can be verified. They are twenty-six in number. Twelve were total hysterectomies without a death, of which the following is an analysis:

1 patient is alive and well 8½ years after operation.
1 „ „ „ 7 „ „
1 „ „ „ 6 „ „
2 patients are „ „ 5 „ „
2 „ „ „ 3 „ „
1 patient is „ „ 1½ „ „
From 4 no answers were received.

Fourteen were very free supravaginal amputations of the cervix without a death, of which the following is an analysis:

1 is alive and well 11½ years after operation.
1 „ „ 10½ „ „
1 „ „ 10 „ „
1 „ „ 9 „ „
1 „ „ 6 „ „
1 lived for 5 years, and died from heart disease without recurrence of cancer.
From 2 no answers were received.
1 lived 4 years and the disease recurred.
5 lived 1 year or less, and recurrence took place.

Mr. F. B. Jessett has been so good as to furnish me with his statistics. He has performed hysterectomy 180 times, with 10 deaths, but of the last 73 cases only 1 died. Of the first series of 107 cases, very many being hospital cases were lost sight of, but 5 are living and well 11, 10, 9, 9, and 8 years later respectively. Of the last series of 73 cases, 12 are known to be well from two to five years after operation. Professor Olshausen's experience in vaginal hysterectomy extends to 808 cases: up to 1903 he had performed 671 operations, with a mortality of 6 per cent.; since 1903 he has done 137

operations, with a mortality of 4·4 per cent. As to the ultimate issue, 70 per cent. lived for two years without recurrence, and 38 per cent. had had no recurrence after five years. The extensive operation involving the removal of the pelvic glands results in a high mortality, and it has not yet been shown that a greater number of cases have been radically cured than by the vaginal operation. When once the glands have become infected, a radical operation, Professor Olshausen thinks, is impracticable. Professor Wertheimer, who performs an extensive operation, only operates on a small proportion of the patients he sees, and his ultimate results are consequently very good—9 out of 14 patients free from disease at the end of four years. Professor Zweifel, of Leipsic, of 153 operations for uterine cancer since January 1, 1897, had 35·6 per cent. of the cases well and free from recurrence after five years. These facts prove beyond a doubt that cancer of the uterus is, like cancer of other organs, a local and a curable disease, if diagnosed and removed in its earlier stages.

It seems to me most desirable that some crusade against the neglect of the well-known early symptoms of uterine cancer should be undertaken, and that women should be warned how important it is for them to consult their medical attendants at an early stage, when, in case of doubt, a small piece of tissue can easily be removed and examined microscopically. It behoves not only the public, but even the profession itself, to shake off the pessimism that has hitherto prevailed on the subject of cancer, and to grasp the fact, that by an early diagnosis and a thorough removal, cancer is a curable disease in a fair proportion of cases.

Palliative Operations.

This, I fear, can at the best form but a melancholy page in my lecture, for over every one of this class of

patients can only be written in large letters, TOO LATE! Can surgery, however, do anything for them? I think it can do much, not only to prolong life, but to prolong it in greater comfort. When operations *per se* were attended with a large mortality, palliative procedures were, as a rule, indefensible; but now that anæsthesia, asepsis, and improved technique do away with the pain and many of the dangers of operative work, there is a large field open to the surgeon to attempt to give relief to those sufferers from malignant disease who have come too late for a radical cure. What can be more distressing than to see a patient slowly starving to death from a cancer of the œsophagus or of the cardiac orifice of the stomach? And yet this is constantly being seen, for there is still an idea abroad that the operation of gastrostomy is a very fatal one, and that the condition of the patient subsequently is unsatisfactory.

What is the true state of affairs? My own experience may be divided into two periods: one where the patients were never handed over to the surgeon until nearly moribund, and then the mortality of gastrostomy was probably all round from 70 to 80 per cent.; and a later period, during which I have personally performed twenty-four operations with only one death—4·1 per cent. Many of these patients lived for months, and some of them for considerably over a year, and were able to keep up their nutrition and to follow their work. There is always a possibility in such cases that the obstruction may be simple, and that after the parts have been set at rest by the gastrostomy, nature may bring about a cure, or that when starvation has been arrested, medical treatment, previously futile, may be successfully adopted. In two cases I have seen this occur, one in a woman, well three years later, and the other in a man, who some years after came to see me and showed me the dimple in the skin, through which

he said that he occasionally passed a catheter so as to keep the opening patent in case he ever needed it again. What the obstruction had been was a mystery, for at the time of operating the symptoms and physical signs distinctly pointed to cancer, and for six months he lived on food introduced through the gastrostomy opening. In cancer too extensive for removal, where the pylorus is stenosed, a gastro-enterostomy often gives the patient the greatest relief, as I can prove by a large number of patients now living in comfort.

I was astonished some time ago to read a statement made by an eminent surgeon, that as the relief after gastro-enterostomy for cancer was so short-lived it was not worth doing. Did time permit I could give examples of patients living in ease and comfort for many months, and in several cases for over a year, after operation, the vomiting and pain, which were persistent before, having entirely disappeared, and the other symptoms having improved so much that the question of a mistaken diagnosis arose in several cases.

It must not be lost sight of, that in some cases of chronic ulcer a large tumour forms and simulates cancer so closely that even when the abdomen is opened the difference cannot be made out. This experience has happened in my practice on several occasions, the first being in the case of a medical man who was worn out with pain and vomiting of coffee-ground material, and was in the last stage of exhaustion. On opening his abdomen to remove the tumour that I thought was cancer, I found the swelling so extensive and the glands to be so markedly involved that I simply performed a gastro-enterostomy, with the result that nearly seven years later he is in excellent health and carrying on his practice as usual. This is not a solitary case, for I have had several quite as startling, and a number of these patients are at the present time living and well.

In one case of cancer of the stomach too ill to bear gastrectomy a gastro-enterostomy gave so much relief that in six weeks the patient was in a condition to bear the major operation, from which he recovered, and when heard of a year later he was well.

When gastro-enterostomy involved a great risk to life, such operations could not be strongly urged, but after a personal experience of over 200 cases of posterior gastro-enterostomy, with only a 3·6 per cent. mortality, I have no hesitation in advising this very beneficent and efficient operation as a means of relief. Even if the whole stomach be involved, so that a gastro-enterostomy is impracticable, the jejunum may be brought to the surface, and through this the patient may be nourished, as in gastrostomy. Eight months ago I operated on a woman who was vomiting several times a day, the vomit being mixed with blood. Her pain was very great every time food entered the stomach, which was forming a perceptible tumour, and she was rapidly going downhill. On opening the abdomen there was no part of the stomach free from disease; a gastro-enterostomy was therefore impracticable, and a loop of the jejunum was brought to the surface, and a catheter fixed in it. The patient was immediately fed, and within a few days was taking milk very freely. She rapidly put on flesh, and returned home in a fortnight. I hear that she is still living in comfort, and that she can now take a little food by the mouth. She has lost her pain and vomiting, and the tumour has diminished, though I fear there can be no doubt about its cancerous nature. In gastric cancer, therefore, at every stage, surgery offers the possibility of cure by removal if caught early, and of great relief if seen too late for a radical operation.

I have spoken at some length concerning the radical cure of cancer of the intestine by enterectomy when

seen in time, but in some cases the disease has advanced too far for complete removal. In such cases the stricture may be short-circuited and set at rest, an operation which not only retards the growth, but prevents obstruction that would be certain to supervene. In one case of this kind in an old man, aged sixty-five years, in whom I found a growth in the ascending colon which I could not remove, I connected the ileum to the sigmoid flexure. He returned home, and was able without pain or suffering to carry on his business for nearly three years. Similar short-circuitings of the intestine I have performed on numerous occasions by means of my decalcified bone bobbins, with the greatest comfort to the patients and prolongation of life for long periods in many. Where the obstruction is low down in the bowel and irremovable, as in the lowest part of the sigmoid flexure or upper part of the rectum, the operation of colotomy may prove of the greatest comfort, and prolong life for a long period; in one case of this kind under my care, the patient lived for nearly five years, and I heard lately of an aged patient living six years after colotomy for cancer of the rectum, though this is unusual.

But there is another point that must not be lost sight of in these cases, for just as I said that the rest induced by a gastro-enterostomy might bring about a cure of a gastric tumour which at the time appeared to be cancer, but which was really inflammatory thickening around a chronic ulcer, so we may have in the rectum and sigmoid flexure, a tumour formed slowly by inflammation, which in mode of growth, in feel through the abdominal wall, in appearance when exposed, in involvement of glands, and in its effect on the lumen of the bowel, presents all the appearances of cancer, and which may entirely subside after a colotomy that gives rest to the inflamed part. This I have seen to

happen on three occasions, and in two patients I was able, after a year, to close the colotomy opening.

In cancer of the pancreas compressing the bile-ducts, although unable to remove the disease, we can short-circuit the gall-bladder into the intestine or drain the bile-ducts on to the surface and so relieve the jaundice. Now, although when the disease is really cancer of the pancreas, the relief is only for a short time—a few months at the outside—yet there are certain cases of inflammatory swelling of the pancreas producing all the symptoms of cancer, which at one time used to die unrelieved under the idea that the disease was malignant. After operating on several of these cases and finding the patients whom I expected only to relieve, ultimately to get quite well, it was my good fortune to recognise the condition of chronic pancreatitis. This has proved of great clinical value, for whereas in cancer of the pancreas a fatal termination occurs within a few months, in chronic pancreatitis and in pancreatic catarrh the results of treatment are most successful, and in an experience of over fifty cases 95 per cent. have recovered, and in nearly all the cases perfect health has been regained.

The spontaneous retrocession of apparently malignant tumours after mere exploratory operations must not be lost sight of when considering the advisability of palliative procedures. Some of the cases of the kind that I have seen I will not pretend to explain, but will briefly mention. About twelve years ago I explored a tumour of the gall-bladder and liver, hoping to find gall-stones in the centre of an inflamed mass. On exposure of the growth I found it nodular and hard, and to be involving the liver, gall-bladder, omentum, stomach, and colon; a hollow needle introduced in various directions showed it to be like cartilage in hardness, and no fluid could be obtained. The abdomen

was closed and an unfavourable prognosis given, but the patient is to-day alive and well, and from the time of operation never had any further trouble. In a case of ascites associated with growths in the pelvis and throughout the abdomen, a small exploratory incision was followed by the complete and perfect recovery of the patient, who was well some years subsequently. In the case of a middle-aged man with a tumour in the gall-bladder region which on exposure was found to be associated with what appeared to be secondary growths throughout the liver, the mere exploration was followed by recovery and restoration of health, and the patient was well a year subsequently. In a large stomach tumour in an old man, with extensive involvement of glands and apparently a hopeless state of affairs, an examination was followed by rapid disappearance of the growth and restoration to health.

I could give many examples, both from my own and from the experience of others, where the physical signs and clinical symptoms gave every appearance of malignancy, but where recovery has followed on exploration. Many such cases have been reported, so that the spontaneous cure of cancer in some peculiar circumstances appears to be within the realm of possibility. A collection of such cases and an attempt to find some condition common to them all would form an interesting subject of research.

It now only remains for me to thank you for the patient hearing you have given to my imperfect treatment of a large subject, and to apologize for my shortcomings. My purpose will have been served if I have been able, in however small a degree, to convince those who have the chance of seeing patients in the early stages of their illness, that in many cases cancer can be prevented by treatment in the precancerous stage; that even when cancer has developed, if it be

seen early and thoroughly removed, it is frequently a curable disease; and, lastly, that even in the later stages much may be done by surgical treatment to give real relief.

Is it too much to hope that some of the views I have enunciated may filter through the profession to the public, and serve to convince them that until a true prophylactic for cancer is discovered they will be consulting their own interests best by seeking medical advice earlier? since to trifle with their ailments in the early stages is to lose the favourable moment, and ultimately to hear the verdict, alas! too often pronounced, Too late.

APPENDIX

STATISTICAL STUDY OF CASES OF CARCINOMA OF THE BREAST ADMITTED TO THE JOHNS HOPKINS HOSPITAL FROM THE OPENING OF THE HOSPITAL, JUNE, 1899, TO JUNE, 1902.

I. Primary Carcinoma of the Breast and Recurrent Carcinoma of the Breast.

During these thirteen years there have been admitted 343 patients: Primary tumours, 305 patients = 89 per cent.; recurrent tumours, 38 patients = 11 per cent.

The original operation on those patients admitted with a recurrent tumour was not performed at the Johns Hopkins Hospital, nor by any member of the surgical staff. In the further study of the mortality, ultimate results, etc., we distinguish in each instance primary and recurrent tumours.

II. Operable and Inoperable Primary Cancer of the Breast.

(*a*) Total number of primary cases, 305: Operable (complete operation performed), 222 = 72·8 per cent.; inoperable, 83 = 27.2 per cent.

The operations performed in the *operable cases* have been as follows:

Group I.

Complete excision of the breast, both pectoral muscles, and axillary contents in one piece; at the same time complete excision of the contents of the supraclavicular fossa, 100.

Group III.

Similar to Group I., except the neck operation was not done, 115.

Group IV.

In this group, for various reasons, the complete operation was not performed; the disease, however, was considered operable—7.

In 3 cases the pectoral muscles were not removed. These operations were performed between 1889 and 1890.

In 2 cases the breast only was removed, and in 2 cases the tumour only was removed. The patients refused further operation.

Group II.

Secondary neck operations—16.

Among the 115 cases of Group III. in which the supra-clavicular glands were not removed at the first operation, a second operation has been performed at various intervals after the first, for the removal of these glands.

The *inoperable* primary tumours have been classified as follows :

Group V.

In these cases, before the operation the disease was considered operable, but during the operation it was demonstrated without a shadow of a doubt that the disease had infiltrated beyond operative interference. This infiltration was either of the chest-wall, in the axilla, or in the neck; and although we attempted a complete operation, we felt convinced that the disease was incompletely removed, and the prognosis was hopeless. This has been noted at the operation in every instance, and was confirmed by the further course of the disease.

Number of cases in Group V.—28. 9·1 per cent. of primary cases, 32 per cent. of inoperable cases.

Group VI.

In these cases the disease was considered inoperable before operation. The incomplete operation was performed with the hope of alleviating pain or removing a disagreeable tumour.

Number of cases in Group VI.—26. 8·5 per cent. of primary cases, 31 per cent. of inoperable cases.

Group VII.

In these cases no operation whatever was performed, either because the disease was inoperable, and we considered

that an operation would give no relief, or because there was distinct evidence of internal metastasis.

Number of cases in Group VII. 29. 9·6 per cent. of total primary, and 35 per cent. of inoperable tumours.

These figures demonstrate that in our thirteen years' experience 83 patients, = 27·2 per cent., have been admitted to the surgical clinic with cancer of the breast in which the disease had been inoperable. Studied in detail, it is easily demonstrable that the tumour had been present a considerable time, and the inoperability in the majority of instances was due to delay in seeking surgical interference.

(*b*) Total number of recurrent tumours, 38. Operable, 16 cases = 42 per cent.: Group I., 2 cases; Group III., 14 cases; Group II., 2 cases. Inoperable, 22 cases = 58 per cent.: Group V., 1 case; Group VI., 11 cases; Group VII., 10 cases.

Groups I. to VII. in recurrent tumours indicate the same as in primary tumours.

These figures demonstrate that 58 per cent. of recurrent tumours have been inoperable, as compared with 27·2 per cent. of primary tumours.

III. The Mortality of the Operation.

(*a*) For *primary* tumours. Complete operations in *operable* cases: Group I., 100 operations, 3 deaths = 3·0 per cent. mortality; Group III., 115 operations, 1 death = 0·8 per cent. mortality. Total, 215 operations, 4 deaths = 1·8 per cent. mortality.

The Cause of Death.—Pneumonia, 1 case, nineteenth day.

Infection of the wound and nephritis, 1 case, eleventh day.

Infection of the wound, 2 cases, seventeenth and eighteenth day respectively.

These figures demonstrate that the mortality during thirteen years among 215 operations for cancer of the breast has been 1·8 per cent.

In the 7 cases noted under Group IV. the operation was not complete. There were no deaths.

Secondary neck operations, 16 operations, 1 death = 6·2 per cent.

The death in this case took place ten days after the neck operation, which was performed five years after the primary breast operation. The patient died suddenly on the tenth day. The symptoms were dyspnœa and cyanosis of a few hours' duration. She had suffered from asthmatic attacks for a number of years. No autopsy allowed; no infection of wound; no signs of pneumonia.

(*b*) For *recurrent* tumours. Complete operations in *inoperable* cases: Group I., 2 cases; Group III., 14 cases. Total, 16 cases, 1 death = 6·2 per cent.

Secondary neck operations (Group II.), 2 cases, no deaths.

These figures demonstrate that the mortality for complete operation for operable primary and secondary carcinoma of the breast was: 231 operations, 5 deaths = 2·1 per cent. mortality.

(*c*) For *primary* tumours. Incomplete operations for *inoperable* tumours: Group V. (attempted complete operation), 28 operations, 2 deaths = 7·1 per cent. mortality; Group VI. (no attempt at operation), 26 operations, 2 deaths = 7·6 per cent. mortality. Total, 54 operations, 4 deaths = 7·4 per cent. mortality.

The Cause of Death.—In the cases of Group V. one died of pneumonia on the twenty-third day. The autopsy demonstrated extensive lung metastasis. The second died on the thirty-second day from secondary hæmorrhage (continuous oozing) from the huge granulating wound. Autopsy demonstrated extensive internal metastasis.

In the cases of Group VI. one died of pneumonia on the twenty-eighth day; the autopsy demonstrated extensive internal metastasis. The second died on the forty-eighth day from general carcinosis. It is a question whether this should be considered an operation death.

(*d*) For recurrent tumours. Incomplete operations for inoperable tumours: Group V., 1 case, no deaths; Group VI., 11 cases, 1 death. Total, 12 cases, 1 death = 8·3 per cent. mortality.

The Cause of Death.—Colitis on the forty-eighth day. Autopsy: extensive internal metastasis. It is important to note that of the 5 cases which died after a complete operation for operable tumours the autopsy in 4 cases demonstrated internal metastasis.

The mortality of the more favourable cases, both primary and recurrent—2·1 per cent.—should be compared with the mortality of the hopeless inoperable tumours, both primary and recurrent—7·5 per cent.

The mortality of the total number of operations—297 = 10 deaths—is about 4 per cent.; but it must be remembered that of these 10 deaths, in only 1, internal metastasis was not present.

Summary of Causes of Death.

1. From shock or hæmorrhage following operation. No cases.

2. From secondary hæmorrhage from wound after operation. No cases.

3. From acute primary infection of the wound. No cases.

4. From late infection of the wound, 4 cases. Death between eleventh and nineteenth day.

5. Pneumonia, 3 cases. Death eighteenth to twenty-third day.

6. Secondary hæmorrhage from granulating wound, 1 case. Death on the thirty-sixth day. The hæmorrhage began on the twenty-fifth day. It had been impossible to completely remove the tumour from the chest-wall.

7. Late deaths (forty-eight days), exhaustion from general carcinosis, 2 cases.

THE ULTIMATE RESULTS AFTER OPERATION FOR PRIMARY CARCINOMA OF THE BREAST.

We consider here those patients operated on between the periods June, 1889, and August, 1899, so that the time since the operation has varied from three to thirteen years.

During those ten years there have been 228 operations: (*a*) Complete operations. Operable tumours, 161 patients; (*b*) Inoperable tumours, 67 patients = 29 per cent.

These 67 inoperable cases were divided as follows: Group V. (attempted complete operation), 23 cases; Group VI. (no attempt at operation), 23 cases; Group VII. (no operation), 21 cases.

We have excluded from the study of the ultimate results these 67 cases of inoperable tumours.

THE ULTIMATE RESULTS IN 161 PATIENTS ADMITTED TO THE CLINIC WITH OPERABLE PRIMARY TUMOURS OF THE BREAST, AND ON WHICH COMPLETE OPERATIONS WERE PERFORMED BETWEEN THE YEARS JUNE, 1889, AND AUGUST, 1899.

	Cases.		Per Cent.
Cured. Living, August, 1902 ...	60	=	37·2
Cured. Dead. These patients lived three years and more, and died of other causes ...	7	=	7
Total	67	=	41
Cured. Special cases. These two patients died before three years after the operation from other causes, confirmed by the autopsy	2		
Total	69	=	42·8
Cases which were apparently cured for at least three years, developed metastasis later, and died	7		
Total	76	=	47·2

These figures demonstrate that 42·8 per cent. represents the number of positively cured cases at the present writing.

The Condition of these 161 Patients Three Years after Operation.

Living three years after operation: (*a*) Apparently cured, 74 cases; (*b*) signs of internal metastasis, 6 cases; (*c*) signs of local recurrence and internal metastasis, 1 case; (*d*) signs of regionary recurrence and internal metastasis, 2 cases. Total, 83 cases = 51·5 per cent.

These figures demonstrate that the probabilities of life after our 161 complete operations are over 50 per cent.

Death before three years after operation: (*a*) Apparently cured, confirmed by autopsy, 2 cases; (*b*) after signs of internal metastasis, but no external recurrence, 37 cases; (*c*) after signs of internal metastasis and visible local recurrence, 16 cases; (*d*) after signs of internal metastasis and visible external regionary recurrence, 23 cases. Total, 78 cases = 48·5 per cent.

These figures demonstrate that of 43 patients who died with signs of internal metastasis, but no external evidence of recurrence, in every instance the symptoms have been present before three years.

Six patients (12·9 per cent.) lived three years after operation.

Local Recurrence.

By local recurrence we designate one in which the recurrent tumour originates in the scar of the field of operation—chest, axilla, or neck.

We have observed definite local recurrence in 17 among 161 complete operations = 10·5 per cent. The longest period of immunity before the appearance of the local recurrence has been two years; and as all these 161 patients who have lived have been observed three years and more since operation, these figures represent without much doubt the correct proportion of local recurrences. In 14 of the 17 cases the local recurrence took place within one year; in the remaining 3 cases, between one and two years.

These figures demonstrate that, if the patient is free from signs of local recurrence for a year, the probabilities are in

favour of its not developing. Only 1 patient with local recurrence has lived three years after operation.

Regionary Recurrence.

Ten of the 17 cases of local recurrence had, in addition to the local recurrence, regionary multiple skin metastasis. By regionary recurrence we designate an external recurrence of the tumour in the neighbourhood, but not in the scar of operation. We have classified them as follows:

(*a*) A single nodule in the skin in neighbourhood of scar, 6 cases.

In 3 of these 6 cases the regionary nodule was observed from three to six months after operation. These 3 patients are recorded as cured. One patient is living four years after operation (August, 1902); one died eight months after operation (age seventy-two; autopsy: no recurrence); the third died in the Johns Hopkins Hospital one year and seven months after an operation for sloughing myoma (autopsy: no evidence of cancer).

These 3 operations for recurrent tumour, after our own complete operation, represent the only cures.

The remaining 3 cases are dead. In 1 the single nodule was noticed five months after operation. The patient died one month later. In the remaining 2 cases the nodule developed about two years after operation; one patient lived two and a half years, the other three years.

(*b*) A single nodule in the muscle, 2 cases.

In one patient a small nodule was noticed in the latissimus dorsi muscle one year and five months after operation. It was partially excised. Patient died three months later of internal metastasis.

In the second case the nodule was noted in the intercostal muscle seven months after operation. At the second operation it was demonstrated that the lung was involved. Patient died three months later.

We have therefore observed in 8 instances single regionary nodules, of which we have saved 3 by operation = 37 per

cent. This demonstrates the justifiability of secondary operations and the possibility of a cure.

(*c*) Multiple skin metastases, 9 cases.

All of these cases are dead. In 8 cases the multiple skin metastasis developed from three weeks to one year after operation, and the patient died in 7 instances within two years after operation, and in 1 case two years and nine months after operation. In only 1 case were these skin metastases observed after three years. This patient lived five years and five months. Between three years and nine months and the time of her death she was subjected four times to operations which consisted in the excision of areas of skin containing two or more nodules.

Multiple skin metastases, in our experience, are practically a fatal prognostic sign. When present previous to operation (93 cases) the ultimate result has also been rapidly fatal. With one exception these multiple skin metastases have appeared within one year after operation.

(*d*) Regionary recurrences in the neck after the complete excision of the glands in the supraclavicular fossa, 6 cases.

In 4 cases the involvement of the higher glands of the neck was observed within one year after operation, and the patient died within two years. In 2 cases the recurrence was not noted until three years. Both were subjected to second operations, and lived four years and one month and four years and eight months respectively.

Regionary recurrences in the higher glands of the neck, therefore, have a fatal prognostic significance.

(*e*) Mediastinal metastases, 7 cases.

In 4 cases the symptoms developed between five months to two years, and all the patients died within three years after the operation; in 3 cases the signs of mediastinal recurrence were not observed until three years, three years and six months, and eight years, the patients dying four years and five months, four years, and nine years and nine months respectively after operation.

A mediastinal recurrence is therefore usually a late recurrence.

Conclusions as to Late Recurrences.

We have never observed a patient to develop signs of internal metastases after three years. We have never observed local recurrences after three years. We have observed 7 cases of regionary recurrence after three years, 2 in the higher glands of the neck a little over three years after operation; 1 multiple skin metastasis; 1 pleural metastasis (protruding externally); 2 mediastinal metastases about four years after operation; and 1 mediastinal metastasis, which exhibited no symptoms until three years after operation.

THE ULTIMATE RESULTS AFTER OPERATION FOR OPERABLE RECURRENT TUMOUR.

We have for observation 10 complete operations for apparently operable recurrent tumours of the breast. We have cured 1 case = 10 per cent. The remainder are dead. One died after operation, from infection; 2 died within one year of internal metastasis; 3 died of regionary and internal metastasis, 2 of them within one year after operation, the third showed signs of recurrence in one year and six months, but lived three years and six months after the operation; one patient has been lost sight of.

These figures demonstrate the bad results for secondary operations after incomplete operations for carcinoma of the breast. In all of these 10 cases, as far as we could ascertain from the history, incomplete operations were performed.

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